

IN THE CLAIMS:

1-72. (Cancelled).

73. (Previously Presented) A thin film transistor comprising:
a crystalline semiconductor island over a substrate having an insulating surface;
source and drain regions in said semiconductor island;
a channel forming region between said source and drain regions;
a gate insulating film adjacent to at least said channel forming region;
a gate electrode adjacent to said channel forming region having said gate insulating film therebetween,
wherein said channel forming region has no grain boundary, and
wherein said semiconductor island includes a spin density not higher than $1 \times 10^{17} \text{ cm}^{-3}$,
wherein said crystalline semiconductor island includes at least one of hydrogen and halogen element at concentration not higher than $1 \times 10^{20} \text{ cm}^{-3}$.

74. (Previously Presented) A thin film transistor according to claim 73 wherein said crystalline semiconductor island comprises a material selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, Ag, Au.

75. (Previously Presented) A thin film transistor according to claim 74 wherein said material is included in said semiconductor island at a concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$.

76. (Previously Presented) A thin film transistor according to claim 73 wherein said semiconductor island includes the point defect of $1 \times 10^{16} \text{ cm}^{-3}$ or more, and the one of hydrogen and halogen element for neutralizing the point defect at a concentration of 1×10^{15} to $1 \times 10^{20} \text{ cm}^{-3}$.

77. (Previously Presented) A thin film transistor according to claim 73 wherein said semiconductor island includes the spin density not lower than $1 \times 10^{15} \text{ cm}^{-3}$.

78. (Previously Presented) A thin film transistor according to claim 73 wherein said semiconductor island is a silicon island.

79. (Previously Presented) A thin film transistor according to claim 73 wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not lower than $1 \times 10^{16} \text{ cm}^{-3}$, and oxygen at a concentration not lower than $1 \times 10^{17} \text{ cm}^{-3}$.

80. (Previously Presented) A thin film transistor comprising:
a crystalline semiconductor island on an insulating surface;
source and drain regions in said semiconductor island;
a channel forming region between said source and drain regions;
a gate insulating film on at least said channel forming region;
a gate electrode over said channel forming region having said gate insulating film therebetween,
wherein said channel forming region has no grain boundary, and
wherein said semiconductor island includes a point defect of $1 \times 10^{16} \text{ cm}^{-3}$ or more, and at least one of hydrogen and halogen element at concentration not higher than $1 \times 10^{20} \text{ cm}^{-3}$.

81. (Previously Presented) A thin film transistor according to claim 80 wherein said crystalline semiconductor island comprises a material selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, Ag, Au.

82. (Previously Presented) A thin film transistor according to claim 80 wherein said material is included in said semiconductor island at a concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$.

83. (Previously Presented) A thin film transistor according to claim 80 wherein said semiconductor island includes said one of hydrogen and halogen element for neutralizing the point defect at a concentration not lower than $1 \times 10^{15} \text{ cm}^{-3}$.

84. (Previously Presented) A thin film transistor according to claim 80 wherein said semiconductor island includes a spin density of 1×10^{15} to $1 \times 10^{17} \text{ cm}^{-3}$.

85. (Previously Presented) A thin film transistor according to claim 80 wherein said semiconductor island is a silicon island.

86. (Previously Presented) A thin film transistor according to claim 80 wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not lower than $1 \times 10^{16} \text{ cm}^{-3}$, and oxygen at a concentration not lower than $1 \times 10^{17} \text{ cm}^{-3}$.

87. (Previously Presented) A semiconductor device comprising:
a crystalline semiconductor island on an insulating surface;
source and drain regions in said semiconductor island;
a channel forming region between said source and drain regions;
a gate insulating film adjacent to at least said channel forming region;
a gate electrode adjacent to said channel forming region having said gate insulating film therebetween,
wherein said crystalline semiconductor island is formed in a monodomain region which contains no grain boundary,
wherein at least one of hydrogen and halogen element is contained at concentration not higher than $1 \times 10^{20} \text{ cm}^{-3}$,
wherein the semiconductor device includes a p-channel thin film transistor having a mobility in a range of $200\text{-}400 \text{ cm}^2/\text{Vs}$.

88. (Previously Presented) A device according to claim 87, wherein said crystalline semiconductor island comprises a material selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, Ag, Au.

89. (Previously Presented) A device according to claim 88, wherein said material is included in said semiconductor island at a concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$.

90. (Previously Presented) A device according to claim 87, wherein said semiconductor island is a silicon island.

91. (Previously Presented) A device according to claim 87, wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not lower than $1 \times 10^{16} \text{ cm}^{-3}$, and oxygen at a concentration not lower than $1 \times 10^{17} \text{ cm}^{-3}$.

92. (Previously Presented) A device according to claim 87, wherein said monodomain region has a grain size of 50 μm or more.

93. (Previously Presented) A semiconductor device comprising:
a crystalline semiconductor island on an insulating surface;
source and drain regions in said semiconductor island;
a channel forming region between said source and drain regions;
a gate insulating film adjacent to at least said channel forming region;
a gate electrode adjacent to said channel forming region having said gate insulating film therebetween,
wherein said channel forming region is formed in a monodomain region which contains no grain boundary,
wherein said crystalline semiconductor island includes at least one of hydrogen and halogen element at concentration not higher than $1 \times 10^{20} \text{ cm}^{-3}$,
wherein the semiconductor device includes at least one n-channel thin film transistor having a mobility in a range of 500-1000 cm^2/Vs .

94. (Previously Presented) A device according to claim 93, wherein said crystalline semiconductor island comprises a material selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, Ag, Au.

95. (Currently Amended) A device according to claim ~~[[94]]~~ 93, wherein said material is included in said semiconductor island at a concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$.

96. (Previously Presented) A device according to claim 93, wherein said semiconductor island is a silicon island.

97. (Previously Presented) A device according to claim 93, wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not lower than $1 \times 10^{16} \text{ cm}^{-3}$, and oxygen at a concentration not lower than $1 \times 10^{17} \text{ cm}^{-3}$.

98. (Previously Presented) A device according to claim 93, wherein said monodomain region has a grain size of 50 μm or more.

99. (Previously Presented) A semiconductor device comprising:
a p-channel thin film transistor;
an n-channel thin film transistor;
each of said p-channel thin film transistor and said n-channel thin film transistor comprising:
a crystalline semiconductor island on an insulating surface;
source and drain regions in said semiconductor island;
a channel forming region between said source and drain regions;
a gate insulating film adjacent to at least said channel forming region;
a gate electrode adjacent to said channel forming region having said gate insulating film therebetween,
wherein said crystalline semiconductor island is formed in a monodomain region which contains no grain boundary,
wherein said crystalline semiconductor island includes at least one of hydrogen and halogen element at concentration not higher than $1 \times 10^{20} \text{ cm}^{-3}$.

100. (Previously Presented) A device according to claim 99, wherein said crystalline semiconductor island comprises a material selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, Ag, Au.

101. (Previously Presented) A device according to claim 100, wherein said material is included in said semiconductor island at a concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$.

102. (Previously Presented) A device according to claim 99, wherein said semiconductor island is a silicon island.

103. (Previously Presented) A device according to claim 99, wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not lower than $1 \times 10^{16} \text{ cm}^{-3}$, and oxygen at a concentration not lower than $1 \times 10^{17} \text{ cm}^{-3}$.

104. (Previously Presented) A device according to claim 99, wherein said monodomain region has a grain size of 50 μm or more.

105. (Previously Presented) A semiconductor device comprising:
a p-channel thin film transistor;
an n-channel thin film transistor;
each of said p-channel thin film transistor and said n-channel thin film transistor comprising:
a crystalline semiconductor island on an insulating surface;
source and drain regions in said semiconductor island;
a channel forming region between said source and drain regions;
a gate insulating film adjacent to at least said channel forming region;
a gate electrode adjacent to said channel forming region having said gate insulating film therebetween,
wherein said crystalline semiconductor island includes carbon at a concentration not higher than $5 \times 10^{18} \text{ cm}^{-3}$,

wherein said channel forming region is formed in a monodomain region which contains no grain boundary,

wherein said crystalline semiconductor island includes at least one of hydrogen and halogen element at concentration not higher than $1 \times 10^{20} \text{ cm}^{-3}$.

106. (Previously Presented) A device according to claim 105, wherein said crystalline semiconductor island comprises a material selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, Ag, Au.

107. (Previously Presented) A device according to claim 106, wherein said material is included in said semiconductor island at a concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$.

108. (Previously Presented) A device according to claim 105, wherein said semiconductor island is a silicon island.

109. (Previously Presented) A device according to claim 105, wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not lower than $1 \times 10^{16} \text{ cm}^{-3}$, and oxygen at a concentration not lower than $1 \times 10^{17} \text{ cm}^{-3}$.

110. (Previously Presented) A device according to claim 105, wherein said monodomain region has a grain size of 50 μm or more.

111. (Previously Presented) A semiconductor device comprising:
an active matrix circuit portion including at least a first thin film transistor;
a driving circuit portion including at least a second thin film transistor;
said second thin film transistor comprising:
a crystalline semiconductor island on an insulating surface;
source and drain regions in said semiconductor island;
a channel forming region between said source and drain regions;
a gate insulating film adjacent to at least said channel forming region;

a gate electrode adjacent to said channel forming region having said gate insulating film therebetween,

wherein said crystalline semiconductor island is formed in a monodomain region which contains no grain boundary,

wherein said crystalline semiconductor island includes at least one of hydrogen and halogen element at concentration not higher than $1 \times 10^{20} \text{ cm}^{-3}$.

112. (Previously Presented) A device according to claim 111, wherein said crystalline semiconductor island comprises a material selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, Ag, Au.

113. (Previously Presented) A device according to claim 112, wherein said material is included in said semiconductor island at a concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$.

114. (Previously Presented) A device according to claim 111, wherein said semiconductor island is a silicon island.

115. (Previously Presented) A device according to claim 111, wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not lower than $1 \times 10^{16} \text{ cm}^{-3}$, and oxygen at a concentration not lower than $1 \times 10^{17} \text{ cm}^{-3}$.

116. (Previously Presented) A device according to claim 111, wherein said monodomain region has a grain size of 50 μm or more.

117-122. (Cancelled).

123. (Previously Presented) A semiconductor device comprising:
a crystalline semiconductor island on an insulating surface;
source and drain regions in said semiconductor island;
a channel forming region between said source and drain regions;
a gate insulating film adjacent to at least said channel forming region;
a gate electrode adjacent to said channel forming region having said gate insulating film therebetween,

wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not higher than $5 \times 10^{18} \text{ cm}^{-3}$,

wherein said crystalline semiconductor island is formed in a monodomain region which contains no grain boundary,

wherein said semiconductor device has a S value of 0.03-0.3,

wherein said crystalline semiconductor island includes at least one of hydrogen and halogen element at concentration not higher than $1 \times 10^{20} \text{ cm}^{-3}$,

wherein the semiconductor device includes at least one selected from the group consisting of a p-channel thin film transistor and an n-channel thin film transistor,

wherein the p-channel thin film transistor has a mobility in a range of 200-400 cm^2/Vs while the n-channel thin film transistor has a mobility in a range of 500-1000 cm^2/Vs .

124. (Previously Presented) A device according to claim 123, wherein said crystalline semiconductor island comprises a material selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, Ag, Au.

125. (Previously Presented) A device according to claim 124, wherein said material is included in said semiconductor island at a concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$.

126. (Previously Presented) A device according to claim 123, wherein said semiconductor island is a silicon island.

127. (Previously Presented) A device according to claim 123, wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not lower than $1 \times 10^{16} \text{ cm}^{-3}$, and oxygen at a concentration not lower than $1 \times 10^{17} \text{ cm}^{-3}$.

128. (Previously Presented) A device according to claim 123, wherein said monodomain region has a grain size of 50 μm or more.

129. (Previously Presented) A semiconductor device comprising:
a crystalline semiconductor island on an insulating surface;

source and drain regions in said semiconductor island;
a channel forming region between said source and drain regions;
a gate insulating film adjacent to at least said channel forming region;
a gate electrode adjacent to said channel forming region having said gate insulating film therebetween,
wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not higher than $5 \times 10^{18} \text{ cm}^{-3}$,
wherein said channel forming region is formed in a monodomain region which contains no grain boundary,
wherein said semiconductor device has a S value of 0.03-0.3,
wherein said crystalline semiconductor island includes at least one of hydrogen and halogen element at concentration not higher than $1 \times 10^{20} \text{ cm}^{-3}$,
wherein the semiconductor device includes at least one selected from the group consisting of a p-channel thin film transistor and an n-channel thin film transistor,
wherein the p-channel thin film transistor has a mobility in a range of 200-400 cm^2/Vs while the n-channel thin film transistor has a mobility in a range of 500-1000 cm^2/Vs .

130. (Previously Presented) A device according to claim 129, wherein said crystalline semiconductor island comprises a material selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, Ag, Au.

131. (Previously Presented) A device according to claim 130, wherein said material is included in said semiconductor island at a concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$.

132. (Previously Presented) A device according to claim 129, wherein said semiconductor island is a silicon island.

133. (Previously Presented) A device according to claim 129, wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not lower than $1 \times 10^{16} \text{ cm}^{-3}$, and oxygen at a concentration not lower than $1 \times 10^{17} \text{ cm}^{-3}$.

134. (Previously Presented) A device according to claim 129, wherein said monodomain region has a grain size of 50 μm or more.

135. (Previously Presented) A thin film transistor according to claim 73, wherein each of the concentrations of carbon, nitrogen and oxygen is measured by secondary ion mass spectroscopy (SIMS).

136. (Previously Presented) A thin film transistor according to claim 80, wherein each of the concentrations of carbon, nitrogen and oxygen is measured by secondary ion mass spectroscopy (SIMS).

137. (Previously Presented) A device according to claim 87, wherein each of the concentrations of carbon, nitrogen and oxygen is measured by secondary ion mass spectroscopy (SIMS).

138. (Previously Presented) A device according to claim 93, wherein each of the concentrations of carbon, nitrogen and oxygen is measured by secondary ion mass spectroscopy (SIMS).

139. (Previously Presented) A device according to claim 99, wherein each of the concentrations of carbon, nitrogen and oxygen is measured by secondary ion mass spectroscopy (SIMS).

140. (Previously Presented) A device according to claim 105, wherein each of the concentrations of carbon, nitrogen and oxygen is measured by secondary ion mass spectroscopy (SIMS).

141. (Previously Presented) A device according to claim 111, wherein each of the concentrations of carbon, nitrogen and oxygen is measured by secondary ion mass spectroscopy (SIMS).

142. (Cancelled).

143. (Previously Presented) A device according to claim 123, wherein each of the concentrations of carbon, nitrogen and oxygen is measured by secondary ion mass spectroscopy (SIMS).

144. (Previously Presented) A device according to claim 129, wherein each of the concentrations of carbon, nitrogen and oxygen is measured by secondary ion mass spectroscopy (SIMS).

145. (Previously Presented) The thin film transistor according to claim 73 wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not higher than $5 \times 10^{18} \text{ cm}^{-3}$, and oxygen at a concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$.

146. (Previously Presented) The thin film transistor according to claim 73 wherein the thin film transistor is one of a p-channel thin film transistor having a mobility in a range of $200\text{-}400 \text{ cm}^2/\text{Vs}$ and an n-channel thin film transistor having a mobility in a range of $500\text{-}1000 \text{ cm}^2/\text{Vs}$.

147. (Previously Presented) The thin film transistor according to claim 80 wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not higher than $5 \times 10^{18} \text{ cm}^{-3}$, and oxygen at a concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$.

148. (Previously Presented) The thin film transistor according to claim 80 wherein the thin film transistor is one of a p-channel thin film transistor having a mobility in a range of $200\text{-}400 \text{ cm}^2/\text{Vs}$ and an n-channel thin film transistor having a mobility in a range of $500\text{-}1000 \text{ cm}^2/\text{Vs}$.

149. (Previously Presented) The semiconductor device according to claim 87 wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not higher than $5 \times 10^{18} \text{ cm}^{-3}$, and oxygen at a concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$.

150. (Previously Presented) The semiconductor device according to claim 93 wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not higher than $5 \times 10^{18} \text{ cm}^{-3}$, and oxygen at a concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$.

151. (Previously Presented) The semiconductor device according to claim 99 wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not higher than $5 \times 10^{18} \text{ cm}^{-3}$, and oxygen at a concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$.

152. (Previously Presented) The semiconductor device according to claim 99 wherein the p-channel thin film transistor has a mobility in a range of $200\text{-}400 \text{ cm}^2/\text{Vs}$ and the n-channel thin film transistor has a mobility in a range of $500\text{-}1000 \text{ cm}^2/\text{Vs}$.

153. (Previously Presented) The semiconductor device according to claim 105 wherein the p-channel thin film transistor has a mobility in a range of $200\text{-}400 \text{ cm}^2/\text{Vs}$ and the n-channel thin film transistor has a mobility in a range of $500\text{-}1000 \text{ cm}^2/\text{Vs}$.

154. (Previously Presented) The semiconductor device according to claim 111 wherein said crystalline semiconductor island includes carbon and nitrogen at a concentration not higher than $5 \times 10^{18} \text{ cm}^{-3}$.

155. (Previously Presented) The semiconductor device according to claim 111 wherein the second thin film transistor is one of a p-channel thin film transistor having a mobility in a range of $200\text{-}400 \text{ cm}^2/\text{Vs}$ and an n-channel thin film transistor having a mobility in a range of $500\text{-}1000 \text{ cm}^2/\text{Vs}$.